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CORRESPONDENCE

Transcription Factor Oct-2 Is Expressed in Primary Murine Macrophages

To the Editor:

In a recent review of the transcription control of hematopoiesis, Shivdasani and Orkin¹ comment that the POU domain transcription factor, Oct-2, is expressed primarily in B lymphocytes. In another report in the same issue of *Blood*, Bargou et al² report on the consistent expression of Oct-2 in Reed-Sternberg cells of Hodgkin lymphoma, a lineage of cells with variable expression of markers of B-cell, T-cell, and monocyte-cell lineages. The emphasis is on Oct-2 as an indicator of an activated B-cell-like phenotype, because Oct-2 is "normally restricted to B cells." Figure 1A shows an electrophoretic mobility shift of the nuclear proteins of primary murine bone marrow-derived macrophages (BMDM) that bind the octamer motif. It is evident that primary macrophages express higher levels, and somewhat greater diversity, of octamer binding proteins than murine macrophage cell lines (Bac1.2F5, RAW264), which are comparable to either murine (NS1) or human (BJAB) B-cell lines. In Fig 1A, the uniqueness of the B-cell/macrophage pattern is shown by the inclusion of the brain, which shows the novel neural Oct binding proteins, whereas embryonic stem cells display another novel octamer-binding profile. Figure 1B again compares BMDM with two murine B-cell lines; a specific mutation known to abolish Oct-2 binding abolishes all binding activities. In both Fig 1A and B, the ubiquitous Oct-1 transcription factor provides an internal loading control. Expression of Oct-2 is not limited to rapidly cycling macrophages (BMDM) that are growing in macrophage colony-stimulating factor. We have observed an identical profile in primary thioglycollate-elicited macrophages obtained from the peritoneal cavity (data not shown). Similarly, the B-cell lines are not deficient by comparison with primary splenic B cells, which have a similar octamer binding profile (data not shown). In comparative Northern blot analysis, both B cells (spleen, NS1) and macrophages (BMDM, RAW264) display similar levels of a major Oct-2 transcript (~4.4 kb) and of minor splice variants.

We conclude that Oct-2 is not restricted to the B-cell lineage in mice. In essence, this extends an earlier study on hematopoietic cell lines³ to primary macrophages. To our knowledge, there is no evidence as yet for the presence of functional octamer motifs in the promoters of any genes expressed specifically in macrophages or of

any overt macrophage phenotype in the Oct-2^{-/-} mouse, so the function of Oct-2 in the macrophage lineage is unknown. Nevertheless, studies of B-cell transcription control should consider why B-cell promoters and enhancers are not active in macrophages.⁴ Oct-2 is not a marker for the B-lymphocyte lineage and its expression in Reed-Sternberg cells might be considered another reflection of their ambiguous lymphoid/monocytoid phenotype.²

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